

CLAIMS

1. An apparatus for providing communications network resource to a plurality of classes of use of the network, a different level of service being associated with each said class of use, said apparatus comprising: a demand estimator for estimating the demand for each of said plurality of classes of use; a dynamic resource allocator for allocating to each class a proportion of said communications network resource, the proportion allocated being dependent on the estimated demand for each class, the allocation optimising use of the available resource whilst at the same time ensuring that the level of service of each class is observed; and a communications network element for providing to each class the proportion of network resource allocated to it.
2. An apparatus according to claim 1 wherein said communications network resource comprises bandwidth of a communications channel fed by said network element and/or buffer depth in said network element.
3. An apparatus as claimed in claim 1 or 2 wherein said demand estimator uses a traffic envelope scheme in which traffic flow is characterised by specifying a particular period or periods over which that characterisation is conducted.
4. An apparatus as claimed in claim 3 wherein the mean and variance of consecutive traffic envelopes is determined to estimate effective bandwidth requirements.
5. An apparatus as claimed in claim 3 or 4 wherein a first effective bandwidth, E_{long} , given by $E_{\text{long}} = \overline{R_T} + \alpha_{\text{long}} \sigma_T$ and a second effective bandwidth, E_{short} ,

given by $E_{\text{short}} = \max_{k=1,2,\dots,T} \left\{ \frac{(\overline{R}_k + \alpha_{\text{short}} \sigma_k) k T}{k \tau - \frac{q}{C}} \right\}$ are used to give the worst case

effective bandwidth estimate E of the traffic flow described by the traffic envelope $E = \max\{E_{\text{long}}, E_{\text{short}}\}$, where the terms used in the equations are defined in the present specification.

6. An apparatus as claimed in any preceding claim wherein a best-effort service is provided as one of the classes.
7. An apparatus as claimed in any preceding claim wherein voice and/or video data is transferred across the network.
8. A method of using a Measurement Based Estimator to provide input to a dynamic resource allocator in a network element.